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**Unravelling the Mystery
of
Battlefield *Coup d'oeil***

**A Monograph
by**

**Major Arthur J. Athens
United States Marine Corps**

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**School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas**

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Abstract

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This monograph analyzes current theories of intuitive decision making originating from the fields of psychology, cognitive science, political science, and management science. The monograph's objective is to determine whether these theories help explain the trait considered essential for success on the battlefield, *coup d'oeil*.

The monograph first synthesizes the thoughts on *coup d'oeil* as addressed by the preeminent military theorists. Next, it traces the development of research on intuitive decision making and how this research introduced a new decision making paradigm. Then, the monograph uses a specific intuitive decision making model, the recognition-primed (RPD), to evaluate the battlefield decision processes of two commanders--British Field Marshall William Slim and Israeli Major General Avraham Adan. Analysis of these two commanders' memoirs helps determine how well the RPD model captures the essence of decision making on the battlefield.

The monograph concludes that the current thought on intuitive decision making provides significant insights into *coup d'oeil*. Specifically, the discoveries in the areas of situational assessment, sequential analysis of options, and mental simulation of proposed courses of action, elucidate how rapid decision making under uncertainty and ambiguity occurs. Additionally, the monograph's historic analysis uncovered another key aspect of intuitive decision making, the "decision framework." This framework includes the numerous predispositions commanders bring to the battle, allowing them to assess their situations quickly and narrow their choices. These observations imply the military should be aggressively educating their officers about intuitive decision making, thereby unveiling the keys to battlefield *coup d'oeil*.

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MONOGRAPH APPROVAL

Major Arthur J. Athens. USMC

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Approved by:

John W. Brooks
LTC Johnny Brooks, M.A.

Monograph Director

James R. McDonough
COL James R. McDonough, M.S.

Director, School of
Advanced Military
Studies

Philip J. Brookes
Philip J. Brookes, Ph.D.

Director, Graduate
Degree Program

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Introduction

To command a military organization is to think and make judgments, employing specialized knowledge and deciding what those commanded will and will not do. To command in wartime is to assume responsibility for taking and saving human lives.¹

A battlefield commander is a decision maker. Often in combat, the commander must make decisions under severe time constraints and conditions of great uncertainty. As Carl von Clausewitz observed, "During an operation decisions have usually to be made at once: there may be no time to review the situation or even to think it through."² Clausewitz believed "if the mind is to emerge unscathed from this relentless struggle with the unforeseen, two qualities are indispensable."³ He identified these qualities as *coup d'oeil* and determination. This monograph will focus on the first of these qualities, the ability to recognize the essential elements of a situation and rapidly make a decision.

Though Clausewitz and other prominent theorists placed a high value on commanders possessing *coup d'oeil*, no one was able to model the decision processes used by the successful intuitive commanders. *Coup d'oeil* became a desired, but mysterious trait. Meanwhile, the military embraced the more comprehensible and popular "rational decision model." The rational model depicts a decision maker as using a systematic process to gather facts, develop possible solutions to a problem, analyze and compare these alternatives, and select the optimum solution using a mathematically-oriented criterion for choice. The dilemma is the military teaches the

rational model, but operates in an environment where conflicting and ambiguous information predominates. Commanders need *coup d'oeil*, but the military is not sure how to explain or teach the intuitive process.

Help is on the way! In the past three decades, researchers have studied decision making and expertise and developed theories on how experts are able to make intuitive judgments and decisions. A yellow flag of caution, however, needs to be waved. The majority of this research has dealt with non-military personnel--chess-players, fire fighters, and corporate executives. The few studies of military commanders have occurred in a training environment or simulation laboratory. The purpose of this monograph is to answer the question: Do current theories of intuitive decision making adequately explain the phenomenon of battlefield *coup d'oeil*?

The monograph addresses the research question by synthesizing the classical thought on *coup d'oeil*, describing the progress of research on intuitive decision making, detailing the operation of a current model of intuitive decision making, and analyzing three essential elements of the model by reviewing two first-person accounts of decision making in battle. The objective is to determine how well the intuitive decision making model describes actual combat decision making.

Though *coup d'oeil* is only one of the qualities an effective military commander must possess, it is a critical quality. The military's emphasis on agility, "the ability of friendly forces to act faster than the enemy," requires rapid decision making.⁴ This superior tempo is possible only if commanders can, as Clausewitz states, quickly

recognize truth "that the mind would ordinarily miss or would
perceive only after long study and reflection."⁵

***Coup d'oeil* Described**

Coup d'oeil is a French term, derived from the words "*coup*" meaning "blow or stroke" and "*oeil*" meaning "eye." The Oxford English Dictionary defines *coup d'oeil* as "a glance taking in a general view; the action or faculty of rapidly taking a general view of position and estimating its advantages and disadvantages."⁶ Great military commanders over the centuries have had this ability to view a situation, make a rapid assessment, and decide quickly.

Clausewitz devoted the most attention to *coup d'oeil* in his writings, but he was by no means the only military theorist to address this trait. Sun Tzu, Mao Tse-Tung, Machiavelli, Frederick the Great, Maurice de Saxe, Napoleon, Baron de Jomini, and T.E. Lawrence all either explicitly or implicitly discussed *coup d'oeil* in their major treatises. By examining these authors' thoughts on the subject, five key characteristics emerge. Commanders with *coup d'oeil*:

1. Operate in an environment of ambiguity and uncertainty.
2. Have an ability to recognize the essential elements of their tactical situation.
3. Rapidly make a decision, based on their situational assessment.
4. Cannot adequately explain their intuitive decision process.
5. Have significant experience to assist in their decision process.

Environment for Decision Making

Commanders with *coup d'oeil* do not operate in an environment where certainty reigns. Mathematical formulas and equations do not provide the answers to tactical problems confronting the commander. Clausewitz described war as a "paradoxical trinity," with one element of the trinity being "the play of chance and probability."⁷ Clausewitz went on to say "... with chance at work everywhere, the commander continually finds that things are not as he expected."⁸ Because of this "relentless struggle with the unforeseen," Clausewitz presented *coup d'oeil* as an indispensable quality on the battlefield.⁹

Situational Assessment

The military commander with *coup d'oeil* has the innate ability to evaluate a situation accurately and set the stage for a rapid decision. Frederick the Great wrote, "The *coup d'oeil* of a general is the talent which great men have of conceiving in a moment all the advantages of the terrain and the use that they can make of it with their army."¹⁰ Maurice de Saxe, writing in 1757, encourages a commander not to be involved with details on the day of battle so "when he sees an occasion, he [can] unleash his energies, hasten to the critical point at top speed," and lead his troops to victory.¹¹ Sun Tzu said it most succinctly: "Weigh the situation, then move."¹² *Coup d'oeil* always starts with this correct evaluation of the situation.

Rapid Decision

Perhaps the essence of *coup d'oeil* is making an effective, timely decision. Sun Tzu wrote, "... to be shy as a maiden [and then]

when the enemy gives you an opening be swift as a hare and he will be unable to withstand you."¹³ T. E. Lawrence, reflecting on his situation advising Arabs in their war against the Turks, stated:

Nine-tenths of tactics are certain, and taught in books: but the irrational tenth is like the kingfisher flashing across the pool, and that is the test of generals. It can only be ensured by instinct, sharpened by thought practising the stroke so often that at the crisis it is as natural as a reflex.¹⁴

The military commander with *coup d'oeil* gains an advantage over the enemy as he looks, assesses, and decides quicker than his opponent.

Inexplicable Decision Process

None of the military theorists were able to describe how the commander's mind processed the limited available information and reached a decision. Clausewitz described the decision process as "flashes of almost automatic intuition rather than being the product of a lengthy chain of reasoning. . ."¹⁵ Jomini was equally awed by the ability of a superior commander's "well-balanced, penetrating mind," and admitted ". . . no book can introduce those things into a head where the germ does not previously exist by nature."¹⁶ Helmut von Moltke stated, "Successive acts of war are not premeditated acts; they are spontaneous, dictated by military intuition."¹⁷ As the great military thinkers of the ages considered this ability, the only apparent explanation was the commander's experience.

Coup d'oeil and Experience

Sun Tzu recognized the value of experience, as he wrote: "... when those experienced in war move they make no mistakes; when they act, their resources are limitless."¹⁸ Mao Tse-Tung similarly remarked over 2300 years later, "Neither a beginner nor a person who fights on paper can become a really able high-ranking commander; only one who has learned through actual fighting in war can do so."¹⁹ Western thinking on the subject was no different. Napoleon wrote, "Commanders-in-chief are to be guided by their own experience or genius . . . generalship is acquired only by experience and the study of the campaigns of all great captains."²⁰ The writers agreed experience was a key component of *coup d'oeil*, but it was a necessary, not sufficient condition.

"When all is said and done, it really is the commander's *coup d'oeil*, his ability to see things simply, to identify the whole business of war completely within himself, that is the essence of good generalship."²¹ Here Clausewitz emphasizes the essential characteristic of great commanders. Though these prolific observers and practitioners of war could observe and describe *coup d'oeil*, they could offer little solace for the officer without it. The psychologists, business researchers, and cognitive scientists in the later half of the 20th Century were the ones to begin unravelling the mystery of *coup d'oeil*.

Intuitive Decision Making

Though numerous students of warfare from Sun Tzu to the present recognized the criticality of *coup d'oeil*, they made limited progress in explaining how this trait operated in the minds of the great commanders. The reason for this void can be attributed to the preeminence of the rational decision model.²² This model originated with Aristotle who developed the powerful tool of logic.²³ This foundation influenced thought in such diverse fields as economics, mathematics, politics, business, and war. Practitioners in these fields were told the rational model accurately described their decision behavior.

How did the rational model remain preeminent when observed behavior refuted many of the model's tenets? Thomas Kuhn, in his book The Structure of Scientific Revolutions, addresses this question by arguing that the success of a scientific paradigm, or model, can be attributed to a scientific community's willingness to defend the basic assumptions of an accepted model and suppress identified anomalies to this model.²⁴ The academic community becomes comfortable with and attached to the status quo. John Steinbruner, in The Cybernetic Theory of Decision, describes why the rational approach gained such widespread acceptance: "The rigorous clarity of its articulation, its widespread application, and the long years of indoctrination are protection against its simple refutation."²⁵ In spite of this entrenchment, Kuhn provides hope:

When . . . the profession can no longer evade anomalies that subvert the existing tradition of scientific practice--then begin the extraordinary investigations that lead the profession at last to a new set of commitments.²⁶

Kuhn calls these "scientific revolutions."

The concerns surrounding the rational model laid the foundation for a revolution in thought about decision making. The realization that other decision making processes were being used led to a paradigm shift away from the rational model. This paradigm shift has begun to help explain *coup d'oeil*.

The Rational Model

To appreciate the paradigm shift that has occurred, the rational decision making process must be understood. Herbert Simon, Nobel Prize winning professor at Carnegie-Mellon University, describes the rational decision maker as follows:

This man is assumed to have knowledge of the relevant aspects of his environment which, if not absolutely complete, is at least impressively clear and voluminous. He is assumed also to have a well-organized and stable system of preferences, and a skill in computation that enables him to calculate, for the alternative courses of action that are available to highest attainable point on his preference scale.²⁷

The rational decision maker faces a problem, gathers a myriad of facts needed to address the problem, makes assumptions about his situation, develops possible solutions for the problem, analyzes and compares these alternatives, and eventually selects the optimum solution using some criterion for choice. John Steinbruner says, "In its simplest version the rational thesis holds that a man acts to maximize

his values under the constraints he faces."²⁸ What becomes problematic is that the rational decision maker must make an exhaustive search for alternatives to achieve an optimal solution, fully understand the consequences attached to each alternative, and be able to accomplish a complex "utility-ordering" of his alternatives.²⁹ Herbert Simon pinpointed the most significant fault of the rational model when he wrote about *bounded rationality*--"the vast disparity between human computing capabilities and the complexity of our world."³⁰ Additionally, even if the rational man had incredible search and computing abilities, he still must make a timely decision.

This rational model still dominates in most fields, including the military. The military planning process and decision making cycle, as exemplified in the Army's FM 101-5, Staff Organization and Operations and the Marine Corps' FMFM 3-1, Command and Staff Action, closely follow the rational model's methodology. Interestingly, it is the tactical environment, one of uncertainty, ambiguity and time sensitivities, that least lends itself to the rational model. The military's "endless quest for certainty," however, tends to drive the organization to the comfort of the rational methodology.³¹

An Alternate Paradigm

As Kuhn points out, for a scientific revolution to occur an alternative paradigm must address certain phenomena that the established model fails to explain. The intuitive decision making model is an alternative paradigm gaining in acceptance.³² The intuitive decision making model's development can be attributed to

the progress in a number of diverse fields: psychology, cognitive science, computer science, political science, and management theory. Numerous researchers contributed to the process of evolving an intuitive decision model. What makes these discoveries significant for the military is the intuitive model describes and explains the key aspects of *coup d'oeil*.

The Earliest Research

One of the first in modern times to challenge the rational model was Chester Barnard, writing about the business world in his 1938 classic, The Functions of the Executive. Barnard described *non-logical processes*, "those not capable of being expressed in words or as reasoning, which are made known by a judgment, decision, or action."³³ He found reasoning to be "little evident in some kinds of 'high pressure' trading, in a great deal of statesmanship, in many political activities, [and] in much of the work of business men or executives."³⁴ Though he did not explain these non-logical processes, Barnard laid some of the foundation for future thought about intuitive decision making.

The 1950s provided four key individuals who made a significant mark on explaining an alternative to rational decision making. These four individuals were Herbert Simon, introduced previously, George Miller, an American psychologist, Adriaan de Groot, a Dutch psychologist, and Charles Lindblom, a public policy expert.

In 1955, Herbert Simon published "A Behavioral Model of Rational Choice" in the Quarterly Journal of Economics. Simon's major contribution to the theory of decision making was his concept of

"satisficing," where decision makers proceed sequentially through a set of alternatives and choose a satisfactory, not necessarily optimal solution. Simon debunked two key elements of the traditional model—first, that decision makers always examine alternatives in parallel and second, that decision makers always attempt to optimize their solution. As Irving Janus states in Decision Making, "Simon argues convincingly that the satisficing approach fits the limited information-processing capabilities of human beings."³⁵ With Simon's article, the intuitive paradigm was beginning to take form.

One year later, George Miller wrote "The Magical Number Seven," describing the information processing limitations of the human mind and ways people overcome these limitations. Miller's thesis was the span of short-term memory was approximately seven items of information. This span, as Miller stated, "imposes severe limitations on the amount of information we are able to receive, process, and remember."³⁶ Miller found this bottleneck is broken by a process he described as *chunking*. Chunking allows grouping of like information, thereby permitting more than seven individual pieces of information to be manipulated in short-term memory. This ability to group information becomes essential for the intuitive decision maker. Herbert Simon expanded Miller's research on chunking and applied it to chess masters. He discovered chess masters were familiar with thousands of board patterns that were stored and recalled as chunks, allowing the chess masters to deal with large volumes of information, even with the inherent short-term memory limitation.³⁷

Adriaan de Groot accomplished an extensive study of novice and world champion chess players. De Groot described how world

champion chess players rapidly evaluated a board position and matched the position observed to their previous chess playing experiences. Additionally, he observed the champions immediately pursued a preferred course of action, rather than weighing alternatives. Before implementing this preferred option, the chess masters undertook a process de Groot named progressive deepening.³⁸ Progressive deepening permitted the chess masters to choose a preferred strategy and mentally investigate that single move to determine if it would produce a satisfactory result. This process of progressive deepening is a key aspect of how an intuitive decision maker arrives at his final decision.

Charles Lindblom, writing in the Public Administration Review, realized the severe limitations of the rational model in a complex world and discussed the "method of successive limited comparisons."³⁹ These limited comparisons were similar to Simon's idea of satisficing, but Lindblom emphasized policy makers were not comparing a wide variety of policy options when making a decision, only policies "that differ in relatively small degree from policies presently in effect."⁴⁰ Lindblom affectionately called this process the *art of muddling through*⁴¹ The popularity of this article helped to further the cause of introducing an alternative approach to rational decision making.

Progress in the 1960s and 1970s

In 1963, Richard Cyert and James March published A Behavioral Theory of the Firm, where they introduced the notion of cybernetic decision making. Their major theme was "the decision process is organized around the problem of controlling inherent

uncertainty by means of highly focused attention and highly programmed response."⁴² Cyert and March claimed decision makers in complex and uncertain environments concentrated on a limited set of cues coming from the environment and acted on these cues. The decision makers based their actions on a set of typical responses and decision rules already programmed in their mind. These typical responses were established by experience.⁴³ Cyert and March provided insight into situational assessment and the role of experience in intuitive decision making.

Two key articles, both published in the Harvard Business Review, made their mark on the intuitive model. The first, appearing in 1974, by James L. McKenney and Peter G. W. Keen, "How Managers' Minds Work," criticized management science techniques, claiming they "had little impact on areas of decision making where the management problems do not lend themselves to explicit formulation, when there are ambiguous or overlapping criteria for action, and where the manager operates through intuition."⁴⁴ McKenney and Keen described how intuitive decision makers use an environment assessment to scan incoming information, organize their perceptions, and rapidly come to a decision. Henry Mintzberg, in a 1975 article entitled "The Manager's Job: Folklore and Fact," reinforced the concept of the decision maker scanning his environment for cues upon which to make decisions and continued the same line that the manager is typically not reflective and systematic in his decision process, particularly when under time pressures.⁴⁵

Recent Discoveries

The 1980s saw continued progress on the intuitive decision making model. New discoveries and the synthesis of previous research solidified thoughts in four specific areas: the organization of knowledge required by the intuitive decision maker, the critical component of situational assessment, the need for experience in one's field, and the idea of metacognition, knowing what you know.

Organization of knowledge. Robert Glaser from the University of Pittsburgh was instrumental in describing the structured knowledge base that differentiates novice from expert decision makers. Glaser claimed "the outstanding performance of experts is derived from how their knowledge is structured for processing."⁴⁶ Experts were found to have a detailed, specialized knowledge base in their mind, particularly organized for rapid retrieval and application to a recognized problem. As Glaser said, "Experts develop the ability to perceive large meaningful patterns, and to do so with such speed that it appears almost intuitive."⁴⁷

Situational Assessment. As described in earlier research, the intuitive decision maker appears to have an innate ability to scan his environment and determine the relevant cues to the decision at hand. Hubert and Stuart Dreyfus, in their 1986 book Mind Over Machine, wrote about the developmental progress from novice to expert in any given field of endeavor. They describe the proficient performer as he scans his environment: ". . . certain features of the situation will stand out as salient and others will recede into the background and be ignored. . . no detached choice or deliberation occurs."⁴⁸ The expert decision maker, according to the Dreyfuses, recognizes situations as familiar and associates the present situation to

similar ones in the past.⁴⁹ At the same time, the expert is always aware of slight differences from the past and adjusts accordingly, keeping "all intuitively desirable options open while reducing his sense of uneasiness."⁵⁰

Experience. Closely associated with situational assessment is the aspect of experience. Situational assessment can be done rapidly and accurately, primarily because the intuitive decision maker has a wealth of experience. Without experience, there is no intuitive decision making. As the Dreyfus brothers write, "A high level of skill in any unstructured problem area seems to require considerable concrete experience with real situations. . ."⁵¹

Metacognition. This aspect of intuitive decision making is best described in the book The Teaching of Thinking: "Experts not only know they know more, they know better to use what they know, what they know is better organized and more readily accessible, and they know better how to learn still more."⁵² Metacognition is a type of self-awareness of one's expertise and this self-awareness helps both the learning and actual decision processes.

Summary of the Intuitive Decision Making Model

- o The prerequisites for intuitive decision making are experience, a well-organized knowledge base, and metacognition.

- o When faced with a decision situation, the intuitive decision maker scans the environment, looks for particular cues, assesses his situation, and relates what he observes to previous experiences.

- o Early on, the decision maker has a feel for what direction he wants to head or what results he wants to achieve.
- o The decision maker considers only a narrow range of alternatives, focusing on only one alternative at a time.
- o For the alternative being considered, the decision maker uses a progressive deepening process to think through the consequences of choosing a particular option.
- o The decision maker reaches a decision when he finds the first satisfactory alternative.

The intuitive decision making model appears to do a reasonable job describing and explaining *coup d'oeil*. The danger becomes accepting a model primarily researched in the civilian sector and applying that model to the military.

As a further step in validating the intuitive decision model's applicability to the military, this monograph presents a historic analysis of decision making in combat. To accomplish this analysis, a model called the recognition-primed decision model is used as representative of intuitive decision making.

The Recognition-primed Decision Model

Work on the recognition-primed decision model began in the mid-1980s with a study of the decision patterns of urban fire chiefs. The aim of the initial study was to "examine the ways decisions are made by highly proficient personnel, under conditions of extreme time pressure, and where the consequences of the decisions could affect lives and property."⁵³ The researchers, led by Gary Klein, "expected to find the types of decision strategies observed under laboratory conditions," namely the rational approach described in the last chapter.⁵⁴ To their surprise, the researchers found a much different decision strategy used by these experienced fire fighters. This strategy became the genesis of the recognition-primed decision (RPD) model. Subsequent validation of the model occurred through observation and interviews of U.S. Army battle planners and armored division platoon commanders, as well as wildlife fire incident commanders.⁵⁵

The RPD model surmises "that proficient decision makers can generate and implement options by judging situations as familiar."⁵⁶ Key elements of the model are situational assessment, serial evaluation of alternatives, and a progressive deepening process to determine the validity of a given course of action. A diagram of the model is provided as Figure 1.

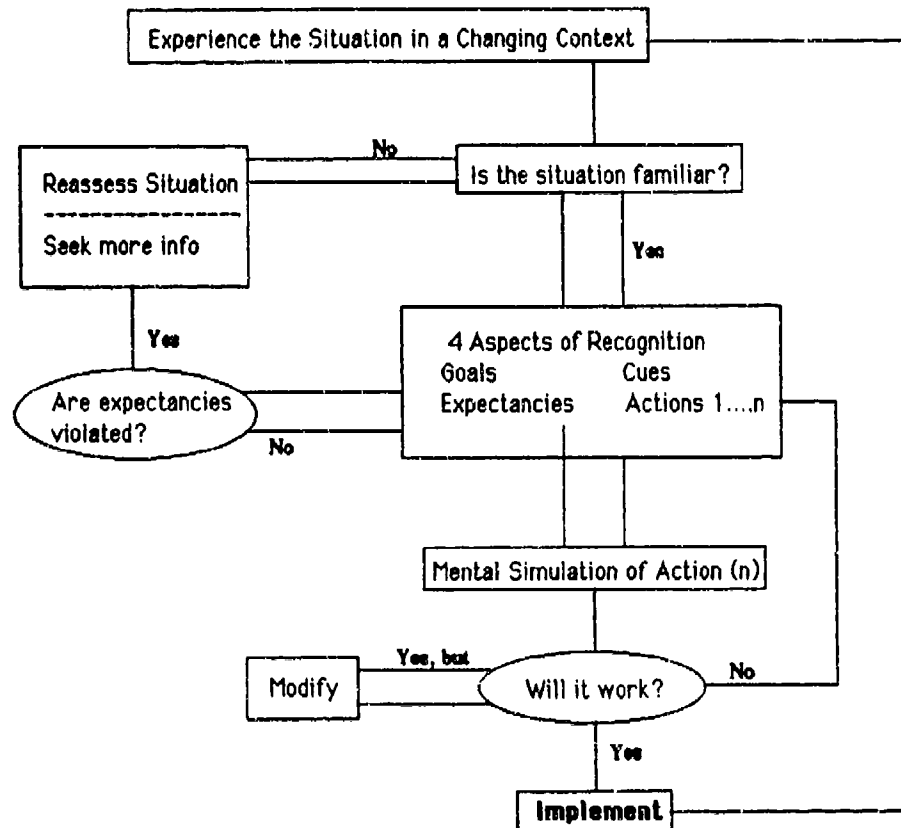


Figure 1
Recognition-primed Decision
Model

Situational Assessment

Advocates of the RPD model view situational assessment as the most critical stage of the decision process.⁵⁷ During this stage, the decision maker scans his environment for cues and attempts to recognize the situation he faces as familiar. As Klein and Crandall discuss in their article "Recognition-primed Decision Strategies," "... a situation is always perceived in terms of some prior experience with similar situations."⁵⁸ The key to the decision maker being able to see similarities between the current situation and past incidents is an extensive and broad experience base.⁵⁹ If an analogy from the past

cannot be formed, the decision maker intensifies his search for cues and continues to deliberate on the situation.

Once the decision maker recognizes the situation, he has an intuitive feel for what goals are feasible for the given situation, what further cues are important, what to expect next in the situation, and a typical action by which to react.⁶⁰ Gary Klein states, "The function of expectancies are to prepare decision makers for action and provide clues for testing whether the situation is correctly understood."⁶¹

Sequential Analysis of Options

In the RPD model, the decision maker does not consider multiple options simultaneously. The decision maker is not necessarily looking for the best option, but one that will satisfy the decision situation. With this serial evaluation process, the decision maker is always in a position to implement the option he is currently evaluating.⁶² When decision makers are faced with extreme time pressures and a situation calls for an immediate decision, this characteristic of the model becomes particularly significant.

Progressive Deepening

The RPD model includes de Groot's concept of progressive deepening. This mental simulation accomplishes the following for the decision maker: 1) finds weaknesses in the option; 2) finds ways to address these weaknesses and thereby embellish the option; 3) uncovers new opportunities associated with implementing the option; and 4) alerts the decision maker to previously ignored dynamics associated with the situation.⁶³

This progressive deepening process results in the decision maker either accepting the course of action, modifying the option, or searching for the next most typical action.

Throughout this entire process, the decision maker continues to reassess the situation, always checking the cues he receives against the expectations developed during the situation assessment phase.

The RPD model successfully captures the essence of intuition. As powerful as this model appears to be, it is based on limited observations and after-the-fact reports. The military scenarios studied have been limited to peacetime training evolutions. What about commanders in war? Is there evidence they fit the RPD model? The next chapter will focus on the three key aspects of the RPD model--situational assessment, sequential analysis of options, and progressive deepening--to determine whether two military commanders in combat exhibited traits supporting the validity of the RPD model.

Analysis of Intuitive Decision Making in Combat

This chapter evaluates the RPD model by examining the decision making processes of two well-respected military commanders. This analysis is important to help validate the model under conditions of combat; the conditions of most interest to military students of decision making.

The decision processes will be evaluated by studying two war memoirs. The first is Defeat into Victory, by Field Marshall William Slim of the British Army, describing action in Burma during the Second World War. The second is On the Banks of the Suez, by Major General Avraham Adan of the Israeli Defense Force, detailing action in the 1973 Arab-Israeli War.

Commissioned in the British Army in 1914, Field Marshall Slim saw significant action during World War I. In World War II, Slim commanded the 10th Indian Division, the 1st Burma Corps, and the 14th Army.⁶⁴ Slim focuses his memoirs on these last two commands.

Major General Avraham Adan saw action in every Arab-Israeli conflict. He served as an infantry company commander, tank battalion commander, planner for the defense of the Suez after the 1967 War, and for five years commanded the Israeli Armored Corps. In 1973, Adan was given command of an armored division that fought throughout the October war, crossed the Suez, and completed the encirclement of the Egyptian Third Army.⁶⁵

These two commanders were chosen for study because: 1) they have solid reputations as battlefield commanders; 2) their personal memoirs are well-written and provide a good deal of insight into their

decision processes; and 3) their experiences are diverse enough to add depth to the analysis.

Caveats to the Analysis

This chapter and the next will provide some observations, conclusions, and implications regarding the RPD model's ability to provide insight into the workings of *coup d'oeil*. An analysis such as this is fraught with danger.

First, this analysis is based on just two commanders. Both were highly experienced officers with much more combat experience than the average American officer will obtain. Second, memoirs can be dangerous instruments with which to judge individuals' decision making. As Field Marshall Slim points out in his preface, "A General who has taken part in a campaign is by no means best fitted to write its history. That, if it is to be complete and unbiased, should be the work of someone less personally involved."⁶⁶ Third, when Slim and Adan describe their decision making process the reader cannot assume the authors presented every alternative they considered. Finally, the complexity of the human thought process can never fully be captured either in writing or verbally by an individual involved in the process. A researcher, therefore, must approach studying the human thought process with humility and not be too quick to make definitive statements about how people make decisions.

Analysis

This section of the chapter is divided into four subsections: first, a look at situational assessment by Slim and Adan; second, an analysis

of the commanders' use of serial assessment; third, a study of their use of progressive deepening or mental simulation of an alternative; and fourth, some additional observations on decision making discovered while reviewing these two memoirs.

Situational Assessment

Recognizing a situation as familiar fell into two categories-- recognition by personal experience and recognition by historical knowledge. On 6 October 1973, the Egyptian forces commenced a massive air, artillery, and ground assault across the Suez Canal. The Israeli Defense Force was caught unprepared and suffered losses in material, people, and terrain. General Adan and his armored division were alerted on this day and raced forward to the northern sector of the Suez. Within two days, Adan's division was planning and executing a major attack against Egyptian forces.

As Adan put together his attack plan, he found himself facing a situation where his entire division was not ready for movement. He needed to decide whether to wait for the entire division to form before moving. Adan recalls, "I decided to move Natke's and Gabi's brigades from the Lateral Road westward in a 'creeping deployment'. . . 'creeping deployment' is not a military phrase, but describes a technique I developed during the 1948 Independence War."⁶⁷ Adan described this technique as organizing on the move, "deploying stage by stage into the desired disposition. . . ."⁶⁸ This experience allowed Adan to evaluate the situation quickly and apply a technique he had previously used with success.

On the 18th of October, when the Israeli forces were crossing the Suez into Egyptian territory, a bridge constructed to cross Adan's division was battered by enemy air attacks. While Adan was evaluating the situation, he noticed two bridge-laying tanks in the vicinity of his command post. He then exclaimed, "A piece of luck! I recalled the techniques we had demonstrated for the senior command staff at the Ruafa'a Dam on how to bridge a small gap."⁶⁹ Again, Adan's experience-base became the foundation for his decision.

Field Marshall Slim recounted two decisions related to river-crossings where his situational assessment led him to decisions based on experience. In the first, Slim was leading his Corps out of Burma under pressure from the Japanese. At one point, one of his brigades, equipped with 13-ton Stuart tanks, was crossing a bridge with a maximum capacity of six tons. All activity halted. Slim inquired as to the builder of the bridge. He was told a well-known British engineering firm had designed and constructed the bridge. The General recounts in his book, "My experience has been that any permanent bridge built by British engineers will almost certainly have a safety factor of one hundred per cent."⁷⁰ Slim ordered the crossing and the brigade safely proceeded.

In the second incident, Field Marshall Slim was planning a crossing of the Irrawady River in Burma as part of his attack into the heart of Burma to destroy the Japanese army. As he made the decision how and where the crossing would be executed, he mused about the risks involved:

I drew comfort, too, at this time from quite another thought. I had, more than once, in two great wars, taken

part in the forcing of a river obstacle, and I had on every occasion found it less difficult and less costly than expected. I had also read some military history, and, although I cudgelled my brains, I could not call to mind a single instance when a river had been successfully held against determined assault.⁷¹

In this case, the combination of personal experience and internalized reading enabled Slim to make his decision.

Again considering how historical perspective can bring recognition to a decision, Adan on one occasion ran into fierce resistance from the Egyptians. His subordinate units painted a dim picture and Adan evaluated the situation. His first thought was to order a retreat, but he relates, "A thought crossed my mind that situations of near collapse frequently come up on the battlefield simultaneously for both sides, and the force that finds the inner strength to hold out just a little longer can sometimes alter the course of the campaign."⁷² This recollection and application to the situation facing him, led him to order his commanders to continue the fight.

In addition to the evidence that the commanders recognized a situation as familiar, the memoirs related the intensity devoted by Slim and Adan to their tactical situation, before an option was considered. This emphasis on situational assessment is an integral component of the RPD model.

Slim, in particular, relates this intense focus on the situational cues around him. During his retreat from Burma, he considered whether to hold a town called Prome in southern Burma with his two divisions. Here are his thoughts about the situation, condensed to provide a flavor of his thought process:

The eastern half of the line across Burma had gone; the town itself, stretching a couple of miles along the river bank with scrub jungle all about it, would need a big perimeter to defend it, and then could easily be cutoff. . . The state of the town was desperate. . . There was no railway out of Prome to the North. . .⁷³

This detailed evaluation of the situation led Slim to decide to depart the town and head north.

In another incident, Slim was choosing objectives for his 1944 return to Burma. Notice his words as he considers his situation: "The more I considered the enemy situation and our own, the more I was sure that here was our opportunity."⁷⁴ Only after spending sufficient time studying the environment did Slim conclude, "My orders were to drive the enemy out of a considerable part of Northern Burma and take Mandalay, but more important than the occupation of any area or any town, was the destruction of the Japanese Army."⁷⁵

The memoirs also record another interesting phenomenon associated with situational assessment--the descriptions given by the authors of decisions based on intuition after a situation had been viewed. The following is a sampling of quotations that illustrate this idea (the italics are not in the original memoirs):

Slim: "My HQ moved to Allanmyo [Burma] on the river, some thirty-five miles north, as Prome was now *obviously* too much in the front line."⁷⁶

"I *felt* certain, *for whatever reasons*, that the engagement with the 25th Brigade would be short and successful."⁷⁷

Adan: "My *intuition* told me that the enemy would also need a period of reorganization and would probably not renew his attack overnight."⁷⁸

"I foresaw difficulties in our advance to the bridges. . . *Intuitively* and contrary to the suggestions of my my staff officers, I decided not to move along the Akavish Road, but rather to advance across the dunes."⁷⁹

As predicted by the RPD model, situational assessment played a key role throughout the decision making processes of Slim and Adan.

Sequential Analysis of Options

There are numerous examples in the memoirs where the decision maker definitely had more than one alternative in mind. Without fail, however, the accounts of these decisions indicate the decision maker was not really comparing options with one another, but rather viewing each sequentially, as the RPD model predicts.

Time was a factor, as Adan, commanding a division in a fast-moving war in the desert made many decisions without any evidence of considering more than one option. Slim, on the other hand, commanding larger formations in a different situation, more often considered multiple options. Field Marshall Slim described his normal decision cycle as follows:

My method of working out such a plan was first to study the possibilities myself, and then informally to discuss them with my Brigadier General Staff, Major General Administration, and my opposite number in the Air Force. At these discussions we would arrive at the broadest outline of possible alternative courses of action, at least two, more often three or four.⁸⁰

But even in Slim's case, when faced with a few alternatives, he judged each alternative sequentially.

Defeat into Victory provides two poignant examples of Slim serially considering multiple options. In the first, Slim was the 15th Indian Corps Commander attempting to decide how to counter a possible Japanese amphibious assault into the Sunderbans, a delta south of Calcutta, India. As Slim recalls, "There were two answers to the problem of the Sunderbans--an overwhelming air force or a flotilla of river craft. The first was, at this stage, out of the question, so we fell back on the second."⁸¹ Notice the first option was not compared to the second, but evaluated on its own merits before being rejected.

A second incident described by Slim involved the Japanese offensive originating from Burma toward Imphal, India. Slim, as the 14th Army Commander asked himself, "What should we do to meet it?"⁸² He related three possible alternatives: attack the enemy first; hold the enemy in the South by destroying them along the Chindwin River in Burma; or concentrate a Corps in the Imphal plain (also in Burma) and fight a decisive battle on the Corps' terms (this option would first require a withdrawal of his forces).⁸³ Slim rejected alternative one for "the enemy could have easily concentrated, along good communications, a force greatly in excess of any we could maintain east of the Chindwin."⁸⁴ The second alternative he similarly rejected due to leaving a long and vulnerable line of communication. The General summed up his evaluation of these alternatives by stating, "Whatever success we had in those conditions were unlikely to achieve a decisive result--and it was a decisive success I wanted."⁸⁵ Slim concludes, "... I must concentrate against him [the Japanese] a force superior both in numbers and armament. I therefore

decided to adopt the third course--to concentrate 4 Corps in the Imphal plain. . . "86 Again, this example shows Slim had more than one option in his mind, but each was considered serially.

Adan also provides an example of considering multiple options serially. Towards the end of the 1973 War, Adan was given the responsibility to take Suez City before a cease fire was declared. Though initially expecting light opposition, two of his main units became embroiled in a vicious firefight and remained trapped. Adan described his decision process as follows:

Still trapped and besieged in the city were Yossi's and Hisdai's forces. We were confronted with a real dilemma now; should they be ordered to try to filter their way out by themselves? That would be a very high risk move, the more so since they had wounded men to see to. What about another attempt at an armored breakthrough to evacuate them? A nighttime penetration into a built-up area is a highly complex operation, and any such attempt would have to be postponed until morning. But I had received reports that the enemy was now mining the road and setting up obstacles on it, as well as positioning antitank weapons. I decided that they should try to extricate themselves during the night.⁸⁷

Adan considered two options: a withdrawal or a breakthrough. At first, he rejected both options. Some reports, however, returned him to the first option and drove him towards a decision for the forces to extricate themselves.

The recollections of Slim and Adan indicate they often considered more than one alternative. They did, however, consider these options according to their merits and did not do any comparisons, particularly in the form suggested by the rational decision model. This *loose holding* of multiple options in their mind

allowed hybrid solutions to be derived. An example of this is when Slim undertook his Arakan offensive in July of 1942 to clear the enemy from the Mayu Peninsula in Burma. He considered three options: a methodical approach straight down the peninsula; a minor amphibious operation; or a long-range penetration to approach the objective from the "back door."⁸⁸ Slim rejected the first two options and went on to say, "The long-range penetration we liked very much, but it could not be effective by itself. Our final answer . . . was a combination of all three."⁸⁹

Progressive deepening

The RPD model recognizes progressive deepening, a type of mental wargaming, as the method decision makers use to evaluate alternatives. As an alternative is considered, the decision maker, with time permitting, thinks through the implications of his decision and the resultant actions. This mental modeling can help refine an option or reject it outright. Two examples will demonstrate the process in action.

During Slim's 1944 campaign in northern Burma, an operation called for a combined ground march and glider assault to take the Burmese town of Indaw. Three landing sites had been selected for the gliders. Two hours before scheduled take-off, however, one of the landing sites was photographed with tree trunks blocking the open area. Fearing the operation had been compromised, Slim's subordinate commander recommended that the operation be called off. Slim reasoned, "The gliders if they were take off that night, must do so within the hour. There was no time for prolonged inquiry or

discussion."⁹⁰ Slim used progressive deepening to consider his alternatives. He mentally pictured the impact of a cancelled operation. He envisioned the massive gathering of glider planes being struck by a Japanese air attack if the operation did not proceed. He thought about the Brigade already in the forward area who would be left stranded without a linkup. Additionally, he pictured the soldiers' disappointment if the operation was called off. After this mental wargaming, Slim gave the go ahead for the glider operation.⁹¹

Adan provided a similar insight into this mental simulation process. In the final days of the 1973 War, Adan's division was on the west side of the Suez Canal and pressing south against the Egyptian Third Army. Adan relates:

Southern Command wanted me to attack via the shortest route eastward toward the canal, through Metzila and Odeda. But I insisted on an attack via the Sarag axis as well. This would enable me to cut off the final supply artery to the Third Army, to cut off the Suez-Cairo road, and also give me more space for maneuver so I could outflank the enemy, too, and not just push ahead with a frontal attack.⁹²

Here, Adan pictured what an attack along the Sarag axis would mean and the result it would achieve. The results of his mental simulation led him to recommend to higher headquarters the Sarag axis option.

The concept of progressive deepening seems to have been an important element in the decision making process of both Slim and Adan. This mental simulation allowed them to take an alternative and project the results to see if the endstate was acceptable. As the RPD models, this progressive deepening allows for determining feasibility

of the alternative in question or the need to modify this option or reject it entirely.

Additional Observations

There was evidence of another important factor in the decision processes of Slim and Adan besides experience. They both operated within a "decision framework" that significantly affected how they assessed a situation, what types of alternatives they considered, and how they evaluated these alternatives. The commander constructed this mental framework based on predispositions he brought to the fight. Some of these predispositions appeared to be well-ingrained, others the commander developed through learning on the battlefield. The predispositions could be categorized as those related to the enemy and those related to friendly operations.

Slim's friendly forces predispositions were characterized by the following quotations:

- "The principles on which I planned all operations were:
(i) The ultimate intention must be an offensive one. (ii) The main idea on which the plan was based must be simple. (iii) That idea must be held in view throughout and everything else must give way to it. (iv) The plan must have in it an element of surprise."⁹³
- "At this time all my plans were based on ensuring a superiority in numbers and force at the decisive points."⁹⁴
- "In [the] future we knew it would be safe to put even greater reliance on our air arm."⁹⁵

Adan had his own set of friendly forces predispositions:

- "My decision to keep Gabi's battered brigade intact was consistent with the spirit of Israel's Defense Forces, that no matter how badly units are decimated, companies, battalions, and brigades must continue to function and fight."⁹⁶
- "If we did not move southward, we would have to launch a frontal assault with no flanking capacity. I despised that kind of warfare."⁹⁷

In the same way, Slim and Adan also had predispositions towards the enemy. For example, Slim remarked, "Our estimate of the Japanese mentality and generalship had also proved right. Kawabe [the Japanese commander facing Slim] and his subordinate commanders showed the overboldness, the rigidity, and the disregard of administrative risks that I had expected and which gave me opportunity."⁹⁸ Adan also had his predispositions toward the Arabs. This came out most clearly in Adan's book when he closed in on the 3rd Egyptian Army and a cease fire was imminent. From previous experiences, Adan did not believe the Arabs would observe the cease fire and therefore he planned to continue the fighting to consolidate gains achieved.⁹⁹

What are the results and implications of this decision framework that appears to overlay the experience chunks found in intuitive decision makers? The primary advantage to these predispositions is they narrow a decision makers locus of cues to attend to and alternatives to consider. With the mental limitations of any human in a complex and ambiguous environment such as war, this prescreening assists in efficiency and speed. A decision maker with a solid set of predispositions and a broad experience base is in a good position to demonstrate *coup d'oeil*.

The drawback to these predispositions is the danger associated if these predispositions are wrong or inflexible. Both Slim and Adan faced this problem. Slim, after miscalculating the Japanese force dispositions and plans during the Burma offensive of 1944, reflected :

I knew that Kimura had replaced him [Kawabe, the previous Japanese commander of Burma forces], but, partly through wishful thinking and partly through lack of information about the new man, I had concluded he would have much the same characteristics and faults as his predecessor. In this I was wrong.¹⁰⁰

After Israeli defeats on the 8th and 9th of October 1973, Adan saw the root of the problem: "Today it is easy enough to see that we were prisoners of our own doctrine: the idea that we had to attack as fast as possible and transfer the fight to enemy territory."¹⁰¹ This predisposition cost the IDF dearly in the opening days of the 1973 War.

This decision framework appears to be an important element of intuitive decision making. The intuitive model needs to address this aspect of decision making to be more robust and representative of actual decision making.

Conclusions and Implications

Do current cognitive theories of intuitive decision making adequately explain the phenomenon of battlefield *coup d'oeil*? This monograph has addressed that question by describing *coup d'oeil*, reviewing the research efforts to develop an intuitive decision making model, and examining the decision making processes of two battlefield commanders. The historical analysis completed suggests the intuitive model does help explain how commanders with *coup d'oeil* make their decisions.

The intuitive model, exemplified by the RPD model, helps to explain the phenomenon of *coup d'oeil* most notably in three areas:

- Intuitive decision makers concentrate intensely on situational assessment throughout the decision process. This is in contrast to the rational model where the decision maker focuses more on generating alternatives for comparison.
- Intuitive decision makers consider options serially by a method called progressive deepening. This is in contrast to the rational model that emphasizes a decision maker comparing alternatives according to some standard evaluation criterion.
- Intuitive decision makers are willing to satisfice on their decisions. The rational model, conversely, relies on optimization.

These three aspects of the RPD model help to explain how the commander with *coup d'oeil* "glances" at his situation and is able to make a timely decision.

Before we rush off and fully embrace the intuitive model, at the expense of the rational model, there are a few warnings to heed. V.K. Triandafilov presented one of these warnings in his Nature of the Operations of Modern Armies. In this treatise, Triandafilov addressed command and control problems in the Soviet Army by reminding his readership that, "Based on the experience of the old Russian Army, one can see all the futile results of making the question of leading troops dependant on the commander's 'intuition' and 'feel.' Numerous fruitless decisions unsupported by material and linked with a great deal of blood and few victories characterized the activity of Russian generals."¹⁰² Intuition does not always work!

The individuals who developed the RPD model provide another warning: "... the danger of misapplying RPD strategies is that personnel will lack the experience needed to identify effective courses of action as the first ones considered, or will lack the ability to mentally simulate the option to find the pitfalls, or will fail to optimize when necessary."¹⁰³ The research on intuitive decision making is clear: experience is key. The pitfall in overemphasizing the intuitive model is it fails to address inexperienced decision makers. This is particularly problematic for the military as most junior officers are inexperienced and many senior officers do not have extensive combat experience.

One final consideration--there probably will never be a single model that can accurately portray the complexity of human decision making. This complexity is directly related to the incredible design and functioning of the human mind. One must be humble in

presenting a model of decision making and acknowledge there is a continuum between rational and intuitive decision making.

Implications for the Military

The ability of the intuitive model to uncloak some of the mystery associated with battlefield *coup d'oeil* implies there are ways the military could enhance intuitive decision making. As Beryl Benderly wrote in her 1989 Psychology Today article on "Everyday Intuition," "Intuition may be an ability that individuals can work toward and organizations can foster."¹⁰⁴

As a beginning, the military could undertake three initiatives better prepare military's officers to be intuitive decision makers.

- Early in their career, officers need to be introduced to intuitive decision making. As John Hayes, author of a course on problem solving at Carnegie-Mellon University, says, "It is important for people to know how their minds work."¹⁰⁵ Most officers enter the military with a solid understanding of the rational model, but ignorance of any alternate paradigm. Officers need to understand concepts such as situational awareness, serial alternative evaluation, satisficing, and progressive deepening. This awareness will help officers to begin to apply and hone their abilities in these areas.

- Officers need to be taught how to optimize their learning from readings and exercises to help overcome the experience deficit. Research on intuitive decision making has determined that "the most important principle of skill performance is that skill depends on the knowledge base."¹⁰⁶ This knowledge base is best developed by experience. This is because personal experiences are

generally vividly ingrained in our brain's neural network and more easily recalled.¹⁰⁷ Personal experience in combat for the average American officer, however, is very limited. An alternative approach must be applied to create this experience level for officers.

As Field Marshall Slim wrote in his concluding thoughts, "Preparation for war is an expensive, burdensome business, yet there is one important part of it that costs little--study."¹⁰⁸ Study, however, that is not properly directed can be wasteful. Both students and teachers must understand and apply the principles of mental associations that increase learning. William James wrote about this learning process in his classic, The Principles of Psychology:

... the more other facts a fact is associated with in the mind, the better possession of it our memory retains. Each of its associates becomes a hook to which it hangs, a means to fish it up when sunk beneath the surface. Together, they form a network of attachments by which it is woven into the entire tissue of our thought.¹⁰⁹

Officers must study military history and learn from tactical exercises with this principle in mind.

- Officers must understand the concept of the decision framework and how it will affect their decision making. They must understand the power of this framework to form predispositions towards both friendly and enemy activities and how this framework will determine what is attended to during the battle. Officers must be able to be introspective to determine the framework, decide its validity, and be prepared to alter the framework as situations on the battlefield change.

Final Note

Attempting to understand *coup d'oeil* through the intuitive decision model is a worthy endeavor. Like any modeling, however, the entire phenomenon can never be captured fully. Additionally, becoming too focused on the decision making process can potentially divert attention away from some of the other realities of war. General Slim in his "Afterthoughts" chapter in Defeat into Victory reminds all military commanders:

There comes a moment in every battle against a stubborn enemy when the result hangs in the balance. Then the general, however skillful and far-sighted he may have been, must hand over to his soldiers, to the men in the ranks and to their regimental officers, and leave them to complete what he has begun. The issue then rests with them, on their courage, their hardihood, their refusal to be beaten either by the cruel hazards of nature or by the fierce strength of their human enemy.¹¹⁰

May all commanders, intuitive or not, always remember the truth of these words.

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